

CASTANEA

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All persons interested in the botany of the Southern Appalachian Mountains are invited to join the club. Dues, including subscription to the *Journal*, are \$3.00 per year. Single copies of *Castanea*, seventy-five cents.

Notes and short scientific papers relating to the botany of the region are welcomed and will be published to the extent that the size of the *Journal* allows.

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CASTANEA

The Journal

of the

Southern Appalachian Botanical Club

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No. 1

Interesting Bryophytes from Tennessee *

ALFRED CLEBSCH

Tennessee's bryophyte flora ranks among the richest and best-known in this country. Many references in the literature point to reports made for this state by competent observers. As one would expect, they gathered their material mainly in those sections of Tennessee where the bryophyte flora showed its most varied display. Large portions of the state were thus omitted from their field work and publications. As far as the writer knows, the list presented here is the first to give distributional data on bryophytes occurring in Tennessee on a state-wide basis.

The eastern part of the state is well known in the literature principally through the annotated list in Sharp's "Taxonomic and Ecological Studies of Eastern Tennessee Bryophytes" (1939). With it he covered the eastern part of the state lying between longitudes 82 and 87 degrees west of Greenwich. Additions to this list are found in his series: "Interesting Bryophytes, Mainly of the Southern Appalachians" (1936) and "Notes on Interesting Bryophytes of the Southern Appalachians II" (1938 b), "III" (1942), and "IV" (1944 b). Elsie Quarterman (1947) published on the bryophytes of the cedar barrens which occur within the western part of the region treated by Sharp. She reported there *Riccia McAlisteri* Howe as addition to the list of bryophytes known for the state. In a subsequent article she discussed the corticolous bryophytes of the cedar barrens (Quarterman, 1949). Her table showing their presence and dominance on bark of red cedar includes four mosses not previously reported as occurring in Tennessee. These are *Tortella flavovirens* (Bruch) Broth., *Leskea*

*Contribution from the Botanical Laboratory, The University of Tennessee, N.S. 153.

nervosa (Schwoegr.) Myrin, *Lindbergia Austinii* (Sull.) Broth., and *Leskea polycarpa* Hedw. A few other publications have dealt, since Sharp's compilations, with records of significance from the eastern part of Tennessee. They are included in the list at the end of this article. The writer gave a survey of the bryophyte flora of Montgomery and adjoining parts of neighboring counties in Tennessee (Clebsch, 1947). This small area is adjacent northwestward to the region treated by Sharp. Here also several species were added to the state list.

During recent years A. J. Sharp has kindly put at the writer's disposal for publication a number of noteworthy collections made by himself and others in the eastern half of the state. With them are included here some collections made by the writer on short trips to the Unicoi Mountains during the summers 1944-1946 in Monroe County of Tennessee near the North Carolina border. The bryophyte flora of eastern Tennessee has the majority of entries in the present report. They include 11 species and 2 varieties known previously only from the high mountains but here recorded for the Appalachian Plateau. Most of them are hepatics. The physiographic provinces and subdivisions of this part of the state, frequently referred to below, are those shown and explained by Sharp (1939, page 319).

The writer also has some additions and corrections to make to his "Bryophytes of the Lower Cumberland River in Tennessee" (1947). The total for this small area now reaches 201 species and 7 recognized varieties or forms. A special study was made of undissected, wet upland, a habitat occurring along the northern boundary of the area which is fast dwindling before civilization.

Except for sporadic mention the western part of Tennessee is left unnoticed in the bryological literature. Here, between the longitudes of 87 and 90 degrees west of Greenwich, the land gradually levels off toward the Mississippi River, the state's western boundary, and an increasingly large proportion is under cultivation. This part of the state, therefore, offers less inducement than the eastern part to the student and collector of bryophytes.

The writer was able to accompany for short periods in the summers of 1947 and 1948 the parties collecting vascular plants for the Botany Department of the University of Tennessee under the leadership of A. J. Sharp when they were in the western part of the state. 175 specimens of bryophytes were collected. While striking discoveries were neither expected nor made, the list includes a few items of considerable interest besides some records that seem worth publishing mainly in view of the paucity of previous reports from this section.

The annotated list that follows combines the three groups of records. To the right of the species' name E indicates occurrence in the eastern, W in the western part of the state; M stands for the area centered by Montgomery County. Counties where a species was found are given in their geographical order from east to west. The taxonomic sequence of families is that chosen by A. J. Sharp for his annotated list (1939). An asterisk is used to mark 17 species and 3 varieties of species recorded here for the first time from Tennessee, also 2 species of which varieties were already known here. A double asterisk points out one species reported for the first time for North America. Unless stated otherwise and with the exception of those from Monroe County, the collections from the eastern part of the state were contributed by A. J. Sharp. He also added to those from the western part when the writer was not present. A complete set of the specimens listed is in the writer's private collection, and a full set of duplicates has been deposited in the herbarium of the University of Tennessee at Knoxville.

A number of authorities have kindly assisted with the identification of critical material. The writer gratefully acknowledges their help. He is particularly indebted to A. J. Sharp for his contribution of material, his advice and encouragement.

ANNOTATED LIST

RICCIACEAE

RICCIA BIFURCA Hoffm. (*Riccia arvensis* Aust.) M
MONTGOMERY: 134 (in part) identified by Don L. Jacobs. This is the second report for the state.

RICCIA BEYRICHIANA Hampe W
HARDIN: GE40. On alluvium of the Tennessee River near its re-entrance into the state. This species appears to be more common in the northwestern part of the Highland Rim than elsewhere in the state.

***RICCIA MEMBRANACEA** Gottsche & Lindenb. E-M-W
WHITE: UT51T1; MONTGOMERY: 170B, 181A, 214, 221, 224, 227, 232; OBION: GE66, GE67; DYER: GE71, GE72; TIPTON: GE76. Of the three West Tennessee Counties the first borders on Reelfoot Lake, the other two on the Mississippi River.

***RICCIA SULLIVANTII** Aust. E-M
SEVIER: 3713 coll. Hugh Iltis; WHITE: UT51T1 (part); MONTGOMERY: 125, 134, 136. All were identified by Don L. Jacobs. These plants may be looked for among the commoner species of the genus.

RICCIA FLUITANS L.

E-M-W

LINCOLN: GE30; MONTGOMERY: 170A, 179, 180A, 181, 209, 219, 220, 222, 226, 231; BENTON: GE61, GE62; CARROLL: GE63; WEAKLEY: GE82; OLIVION: GE64; GE65; DYER: GE70. All of these are the land form, commonly in fruit. R. L. MGregor examined most of the material.

MARCHANTIACEAE

MARCHANTIA DOMINGENSIS Lehm. & Lindenb.

E

COFFEE: GE16. Previously known in the state only from the Ridge & Valley Province, it is here recorded from the southeastern part of the Highland Rim, placing a new station on the northern boundary of the range of this southern hepatic shown by Sharp (1938 a).

METZGERIACEAE

METZGERIA CRASSIPILIS Lindb.

E

MONROE: U3. The range in the high mountains is extended southward from the Smokies.

*METZGERIA FURCATA var. AERUGINOSA (Hook.) Frye & Clark.

E

SEVIER: UT517. This was found at an altitude of 6600 feet by A. J. Sharp who also reported it for the first time from Virginia, as *Metzgeria fruticulosa* (Dicks.) Evans (Sharp, 1944 a). Except for his two collections it is known in this country only from the northwest.

METZGERIA CILIIFERA Schwein. (*M. myriopoda* Lindb.)

W

LAWRENCE: GE34. This species of mainly southern distribution, but also occurring in the northeast, had been previously reported in the state from the Ridge & Valley Province.

*METZGERIA PUBESCENS (Schränk) Raddi

E

SEVIER: UT527. This represents a considerable range extension southwestward from the District of Columbia.

PALLAVICINIA LYELLII Hook.) S. F. Gray

E-W

FRANKLIN: S12; LAWRENCE: GE103; WAYNE: GE27, GE38; HARDEMAN: GE51. The stations here added to its known distribution in Tennessee are in the southern tier of counties and show the extension of its range into the Mississippi Embayment (Sharp, 1941 a, 1941 b).

RICCARDIA SINUATA (Dicks. Trevis

E-W

BLED SOE: GE11; COFFEE: GE26; STEWART: WO4; CHESTER: GE99; HARDEMAN: GE53. All on decaying wood while in Montgomery County where it was first reported for the state it occurs commonly on wet, shady clay banks. The records listed are on the southwestern border of its known range in the eastern United States.

RICCARDIA SINUATA (Dicks.) Trevis E-W
 MORGAN: UT5129; WHITE: UT51T2; COFFEE: GE28; MONTGOMERY: 123, 175, 196, 245; STEWART: WO1; WEAKLEY: GE83, GE84, GE85; OBION, GE69, GE80, GE92; LAKE: GE90, GE91, RL5. While most authors name moist soil as the substratum, Ammons (1940) quotes Karl Müller as stating "no great emphasis should be placed on the substratum, for one finds it on limestone and on sandstone, likewise on soil and on wood." The specimen from Morgan Country grew on sand and lacks the typical greasy lustre shown by all of the other material which was found on spongy, decaying wood in moist places. Carroll (1945) reports it from the Appalachian Plateau in Georgia as common on moist banks of streams.

PELLIACEAE

FOSSOMBRONIA BRASILIENSIS Steph. M
 MONTGOMERY: 240, 241. On bank of intermittent water course in woods on undissected land. The only previous Tennessee record is from the Nashville Basin.

PELLIA EPIPHYLLA (L.) Corda E-W
 OVERTON: CP11 coll. H. C. Phillips; Franklin: S1; HENDERSON: GE78, GE79; HARDEMAN: GE52. The latter two counties indicate the western extent of its known range in the state.

LOPHOZIACEAE

CHILOSCYPHUS POLYANTHUS (L.) Corda W
 LAKE: RL4. Former reports of this species for the state were from the eastern mountains. Farther north than Tennessee it is widely distributed.

CHILOSCYPHUS FRAGILIS (Roth) Schiffn. W
 CHESTER: GE101, identified by Margaret Fulford. This species, likewise mainly of more northern distribution, was previously known only from Carter county in the northeastern corner of the state.

HARPANTHUS SCUTATUS (Weber & Mohr) Spruce E
 MORGAN: UT5127. Previously known in the state only from the eastern mountains but here recorded on the Appalachian Plateau.

JAMESONIELLA AUTUMNALIS (DC) Steph. (M)
 This species was erroneously claimed for Montgomery County (Clebsch, 1947) and should be deleted from that list.

JUNGERMANNIA LANCEOLATA Schrad. E
 OVERTON: CPI coll. H. C. Phillips. On the escarpment of the Appalachian Plateau. Carroll (1945) reports it as common in this

province in Georgia. Former Tennessee records were from the high mountains alone.

*LOPHOCOLEA MINOR Nees.

W

LAKE: GE87, RL2. The first was identified by Margaret Fulford. Outside of Tennessee the species has a wide range.

GYMNOCOLEA INFLATA (Hedw.) Dum.

E

BLEDSE: GE12. Reported previously for the state only from Alum Cave near Mt. LeConte in a range extension from New England. The collection recorded here is of special interest because it was made in the swamp on the Cumberland Plateau where *Sphagnum macrophyllum* was found (Sharp, 1947). Margaret Fulford and K. A. Wagner both studied the material and concurred in its identification.

*LOPHOZIA HELLERIANA (Nees) Boulay (*Isopaches Hellerianus*)

(Nees) Buch)

E

SEVIER: on Mt. LeConte trail June 13, 1947, coll. and det. by A. LeRoy Andrews. It was previously not known farther south than West Virginia.

LOPHOZIA BICRENATA (Schmid.) Dum. (*Isopaches bicrenatus*

(Schmid.) Buch)

M-W

MONTGOMERY: 202; CHESTER: GE55; HARDEMAN: GE41. The latter two counties may mark the southern extent of its range in this country. In the state it had been recorded previously from the eastern mountains.

MARSUPELLA SPHACELATA (Gies.) Dum.

E

BLEDSE: GE12. Known heretofore in the state only from Mt. LeConte it is here reported from the Appalachian Plateau.

MARSUPELLA SPHACELATA var. ERYTHROHIZA (Limpr.) Schiffn.

(M. *Sullivantii* Evans)

E

CUMBERLAND: UT51T5; VAN BUREN; GE9, GE10. This variety is somewhat commoner than the species; information about its occurrence in the state is the same.

NARDIA CRENULATA (Sm.) Lindb. (*Plectocolea crenulata* (Sm.)

Buch)

M

MONTGOMERY: 254A coll. A. J. Sharp. Previously recorded only from the extreme eastern part of the state. This collection on the Highland Rim was made on soil in woods on undissected land.

PLAGIOCHILA SULLIVANTII Gottsche

E

OVERTON: CP12 coll. H. C. Phillips. This represents another range extension in the state from the eastern mountains to the escarpment of the Appalachian Plateau.

**PLAGIOCHILA SMALLII* Evans

E

SEVIER: SM62 coll. Paul L. Redfearn, Jr., and Edward Clebsch. The material was collected on Porter's Flats Trail in the Great Smoky Mountains National Park at an altitude of 2500 feet. In it the heretofore unknown male inflorescence is present. The determination was made by T. C. Frye. Being known from Bermuda, Florida and the West Indies, this is one of the highly interesting disjuncts in the Southern Appalachians.

CEPHALOZIACEAE

CALYPOGEIA NEESIANA (Massal & Carest.) K. Müll.

E

SCOTT: GE1. This species was inadvertently omitted in Sharps' annotated list (1939), but had been mentioned by him already in his Preliminary Report (1931) for Sevier County, a record to which Frye & Clark (1937-1947) refer. This is another hepatic previously known in the state only from the eastern mountains and here reported as found on the Appalachian Plateau. Carroll (1945) reports it as common in this province in Georgia.

**CEPHALOZIA LAMMERSIANA* (Hüb.) Spruce

E

SEVIER: on Mt. LeConte trail, June 13, 1947, coll. and det. by A. LeRoy Andrews. It has been reported from Bell County, Kentucky, about 65 miles to the north from Mt. LeConte. Frye & Clark (1937-1947) list also Maine and a few far western states but suggest that it is more widely distributed than recognized.

CEPHALOZIA CURVIFOLIA (Dicks.) Dum. (*Nowellia curvifolia* (Dicks.) Mitt.)

W

LAKE: RL3. So far this is the only record of this species from the western part of the state.

MICROLEPIDOZIA SYLVATICA (Evans) Jorg. (*Lepidozia sylvatica* Evans)

E

VAN BUREN: GE7. This is another species occurring in the state in the eastern mountains and also on the Appalachian Plateau. There had been, before the destruction of the herbarium by fire in 1934, some material at the University of Tennessee showing this species from Morgan County on the Plateau.

ODONTOSCHISMA PROSTRATUM (Sw.) Trevis

M

CHEATHAM: SYC5. From the sandstone formation overlying the Highland Rim at Sycamore Creek.

PTILIDIACEAE

HERBERTA TENUIS Evans

E

CUMBERLAND: UT51T4, UT5316. This species appeared to be

restricted in the state to the Blue Ridge Province, but is here reported from the Appalachian Plateau, marking the southwestern extent of its known range.

TRICHOLEA TOMENTELLA (Ehrh.) Dum.

E-M

COFFEE: GE18; CHEATHAM: SYC4. These collections add two records for the Highland Rim to somewhat scattered stations in the eastern part of the State.

SCAPANACEAE

DIPLOPHYLLUM ANDREWSII Evans

E

MONROE: U4, U33. Farther southwest on the state-line ridge than previous records for the state. But the area where it is known to occur remains quite small, North Carolina and Kentucky being the only other states from which it has been reported. The collections listed here came from moist, vertical sand banks and sandstone.

RADULACEAE

RADULA ANDICOLA Steph.

E

WHITE: GE17; COFFEE: GE60. The latter station is in the eastern part of the Highland Rim and marks the western extent in the state of the range of this southern hepatic.

LEJEUNEACEAE

FRULLANIA EBORACENSIS Gottsche

M-W

MONTGOMERY: 142; STEWART: WO3. This widely distributed species had been shown for Tennessee only from Sevier County until Elsie Quarterman (1949) reported it as the most prevalent of the corticolous hepatics in the cedar barrens.

JUBULA PENNSYLVANICA (Steph.) Evans

E

FRANKLIN: S9. This includes the southwestern escarpment of the Appalachian Plateau in the distribution of this species throughout the eastern part of the state.

LEJEUNAE PATENS Lindb.

E

MONROE: U15. Farther southwest along the ridge of the Appalachian Mountains than formerly known stations in the state.

LEUCOLEJEUNEA CLYPEATA (Schwein.) Evans

E-M-W

OVERTON: CP7 coll. H. C. Phillips; FRANKLIN: S3, S8; LINCOLN: GE32; CHEATHAM: SYC6; WAYNE: GE35, GE36; WEAKLEY: GE81A; HARDEMAN: GE49, GE75. In the western part of the state it was found growing mainly on fallen logs, stumps, and living trees.

MICROLEJEUNEA LAETEVIRENS (Nees & Mont.) Evans. E
FENTRESS: GE4. The extent of its known range in the eastern part of the state, where it is fairly common, is marked here at the northwestern escarpment of the Appalachian Plateau.

RECTOLEJEUNEA MAXONI Evans E
VAN BUREN: GE8. Previously reported from only two counties in the eastern part of the state, it also is shown to reach the escarpment of the Appalachian Plateau. Patterson (1950) extended the known distribution of this southern hepatic northward to Virginia.

SPHAGNACEAE

All collections in this family were submitted to and identified by A. LeRoy Andrews. The list includes some of the commoner species as well as those of particular interest.

SPHAGNUM PALUSTRE L. E-W
SCOTT: GE27; WAYNE: GE85; HENDERSON: GE179 (in part); HARDEMAN: GE111. This species is widely distributed in the state.

SPHAGNUM IMBRICATUM Hornsch. E
OVERTON: CP2 coll. H. C. Phillips; LINCOLN: GE80. It is found in the state mainly on the Appalachian Plateau and the eastern part of the Highland Rim.

SPHAGNUM COMPACTUM DC. E
COFFEE: GE37, GE61; LINCOLN: GE81. Its distribution in the state is similar to that of the preceding species.

*SPHAGNUM RECURVUM Beauv. E-W
LINCOLN: GE78, GE79; HARDEMAN: UT4942. Both counties are on the southern border of the state. The writer has collected this species also in North Carolina close to the border of Monroe County, Tennessee.

*SPHAGNUM CUSPIDATUM Ehrh. E
MARION: UT484. In the southern part of the Appalachian Plateau in the state.

SPHAGNUM SUBSECUNDUM Nees E-M-W
GRUNDY: GE141; WARREN: GE140; COFFEE: GE38, GE60; MONTGOMERY: 1003; HARDEMAN: GE112; HENDERSON: E178, GE179. This is the commonest and most widely distributed *Sphagnum* in the state.

SPHAGNUM CYCLOPHYLLUM Sull. & Leq. E
RHEA: GE16; COFFEE: GE59. The Rhea County station has been known for some time and was mentioned by Sharp (1942, 1947).

DICRANACEAE

DICRANELLA HETEROMALLA (Hedw.) Schimp. M
 CHEATHAM: SYC30. Only the variety *orthocarpa* had been recorded previously for this section of the state.

RHABDOWEISIA DENTICULATA (Brid.) B.S.G. E
 SCOTT: GE4. This is slightly farther north than previously known stations on the Appalachian Plateau in Tennessee. The material collected is freely fruiting.

DICRANUM MONTANUM Hedw. E
 WILSON: UT5030. The first report of this species from the Nashville Basin. Its occurrence here and on the Highland Rim, where it is not uncommon, shows that it is not confined to mountain regions. Similarly it was reported by Anderson (1939) from the Piedmont in North Carolina.

DICRANODONTIUM DENUDATUM (Brid.) E. G. Britt. E-(M)
 SCOTT: GE4; PICKETT: GE9. These collections show further distribution of the species in the northern part of the Appalachian Plateau in Tennessee. Carroll (1945) reported it for this province in Georgia. The collection supporting the occurrence of this species in Montgomery County (Clebsch, 1947) has been re-examined and proved to be something else. The name should be deleted from that list.

CAMPYLOPUS TALLULENSIS Sull. & Lesq. (*C. flexuosus* (L.) Brid.) E
 RHEA: GE14. This indicates a wider distribution on the Appalachian Plateau in Tennessee for this interesting disjunct.

DITRICHACEAE

PLEURIDIUM SUBULATUM (Hedw.) Lindb. W
 WAYNE: UT4942; MADISON: UT4947. Previous reports for the state were from the Ridge & Valley Province and from the northwestern section of the Highland Rim.

BRUCHIA SULLIVANTI Aust. W
 MADISON: UT4948. Its status is the same as that of the last.

DITRICHUM LINEARE (Sw.) Lindb. E
 MONROE: U126. This is southwest of the two previously known places of its occurrence in the state on the eastern mountain ridge.

DITRICHUM PUSILLUM (Hedw.) E. G. Britton M
 MONTGOMERY: 867. The plants were found growing with *Barbula Cruegeri* Sond.

TREMATODON LONGICOLLIS Mx.

E

DE KALB: UT51T13. It was heretofore known in the state only from the Smoky Mountains. This record from the eastern part of the Highland Rim is an interesting addition. Anderson (1938 b) reported it from the mountains as well as from the northern Piedmont in North Carolina.

SELIGERACEAE

SELIGERIA PUSILLA (Hedw.) B. S. G.

E

COFFEE: GE54. This second report for the state is, like the first, from the Highland Rim.

GRIMMIACEAE

RHACOMITRIUM HETEROSTICHUM var. SUDETICUM (Funck) Jones E

CUMBERLAND: UT5017. This variety is in Tennessee considerably south of its general range. Formerly known only from the high mountains it is here reported from the Appalachian Plateau.

CALYMPERACEAE

SYRRHOPODON TEXANUS Sull.

E

SCOTT: GE6; PICKETT: GE13; CUMBERLAND: UT51T4. With previously known stations these counties make a block of six on the northern Appalachian Plateau in Tennessee. Patterson (1950) filled in the coastal range of the species with a record from Norfolk County, Virginia, and Wolfe (1942) extended its inland range northward to Hocking County in central Ohio.

TORTULACEAE

EUCLADIUM VERTICILLATUM (L.) B. S. G.

E

COFFEE: GE51. The southeastern part of the Highland Rim is here added to former records in the state from the Appalachian Plateau and the Nashville Basin.

DIDYMODON TOPHACEUS (Brid.) Jur.

M

MONTGOMERY: 700A, 722, 800, 848, 853A, 983. From seeping cracks in limestone cliffs facing the Cumberland River. It was formerly known in the state only from Knox County in East Tennessee.

BARBULA CONVOLUTA Hedw.

E

WHITE: GE122. The first collection of this species made on the Highland Rim.

BARBULA FALLAX Hedw.

M

MONTGOMERY: 758. Of the two previous records in the state one is also from the Highland Rim, the other from the Nashville Basin.

TORTULA PAGORUM (Milde) DeNot.

M

MONTGOMERY: 149. This collection was made at some distance from dwellings. Quarterman's (1947) reports of this species from the cedar barrens likewise suggest that it may be spreading from its habitats near civilization and smoke, but no claim is made for as clear an instance of separation as that reported by Anderson (1951).

TORTULA PORTERI (James & Aust.) Broth. (*Desmatodon Porteri* James)

E-W

GILES: UT487; HOUSTON: WO14. Both stations are on the Highland Rim.

BRYOXIPHIACEAE

BRYOXIPHUM NORVEGICUM (Brid.) Mitt.

E

PICKETT: GE11. The fourth county in the state from which it is known. All reported stations in the state lie in the northern part of the Appalachian Plateau. Harvill (1949) extended its range southward to Winston County, Alabama.

FISSIDENTACEAE

FISSIDENS MINUTULUS Sull.

M

MONTGOMERY: 747. Fruiting and well developed plants were found growing on a stick lying among rocks, an unusual sub-stratum for this species.

**FISSIDENS ANDERSONI* Groul

W

WEAKLEY: GE151; HARDEMAN: GE92, identity checked by W. C. Steere; LAKE: RL33. This species was first found by Anderson on soil in a cypress swamp in Currituck County, North Carolina, in 1939 and has not been reported since then. Habitat and substratum of the Tennessee plants agree with those given for the type locality, except that the specimen from Lake County grew on decaying wood inside a cypress stump.

**FISSIDENS ADIANTOIDES* Hedw.

E

COFFEE: UT4764 coll. K. A. Wagner, identified by W. C. Steere. Although widely distributed this species is seldom recorded in this region. The plants grew in moist habitat similar to that mentioned by Anderson (1938 a) for collections from North Carolina.

PTYCHOMITRIACEAE

PTYCHOMITRIUM DRUMMONDII Sull.

W

HARDIN: GE88; OBION: RL1, GE132; LAKE: RL2, RL11; LAUDERDALE: GE133; TIPTON: GE136. In Hardin County it was found not far from the Tennessee River. The remaining stations,

near the western border of the state, follow the Mississippi River and bodies of water close to it. All material collected grew on bark of various living trees. Clebsch (1947) reported it as growing on cedar logs at the foot of limestone cliffs on the Cumberland River. This colony still exists. The species has recently been reported from Virginia (Iltis, 1950; Patterson, 1950).

ORTHOTRICHACEAE

ULOTA AMERICANA (P. B.) Limpr. E
RHEA: UT4976; CUMBERLAND: UT51T7; OVERTON: CP6 coll.
H. C. Phillips. These are the first reports for the Appalachian Plateau in Tennessee of a species formerly known only from the mountains of the Blue Ridge Province.

NECKERACEAE

NECKERA COMPLANATA (Hedw.) Hueben. E
WHITE: GE126; GILES: GE191. The records of these locations fill in the southern disjunct area in Tennessee of this northern and sub-alpine moss.

POROTRICHACEAE

POROTRICHUM ALLEGHANIENSE (C. Müll.) Grout E
VAN BUREN: GE121. The western boundary of its range in the state appears to be the escarpment of the Appalachian Plateau.

CLIMACIACEAE

CLIMACIUM AMERICANUM Brid. M
CHEATHAM: SYC18, SYC34, SYC40. In 1946, 1948, and 1951 the same colony showed, early in April, sporophytes with mature spores. A similar observation is reported by Quarterman (1947) from the cedar bairrens.

FONTINALACEAE

FONTINALIS DALECARLICA B. S. G.
MONROE: U61 det. Winona H. Welch. In the Unicoi Mountains of the Blue Ridge province at an elevation of 5000 feet, southwest of previously known stations in the Smokies.

FONTINALIS NOVAE-ANGLIAE Sull. M
MONTGOMERY: 958 det. Winona H. Welch, 963, 967, 968. This moss was regularly found in intermittent water courses in woods on undissected land. It is widely distributed in the eastern half of the state.

FONTINALIS NOVAE-ANGLIAE var. *CYMBIFOLIA* (Aust.) Welch E
 VAN BUREN: GE23 det. Winona H. Welch. This county and three others where this variety was previously found lie on the Appalachian Plateau.

**FONTINALIS DISTICHA* Hook. & Wils. E
 GRUNDY: UT5013 det. Winona H. Welch. Since Welch in Grout (1928-1940) gave Louisiana and Alabama as the range of this species, Fulford & Shacklette (1942) reported it from Kentucky, Emmitt (1950) from Ohio, and Winona H. Welch found it in Indiana. The collection reported here is from the Appalachian Plateau in Tennessee.

DICHELYMA CAPILLACEUM (Dill.) B. S. G. M
 MONTGOMERY: 962. In an intermittent water course in woods on undissected land. This is the second report from Tennessee, the first having been given by Sharp (1939). According to his statement to the writer he intended to list the species named here, although he used *D. capillaceum* (Brid.) Myrin which is a synonym of another species, *D. pallescens* B. S. G.

HOOKERIAACEAE

HOOKERIA ACUTIFOLIA Hook. E
 RHEA: GE19; OVERTON: CP21 coll. H. C. Phillips; FRANKLIN: S8. The last-named collection shows that the range of this species in the state extends southwest to the escarpment of the Appalachian Plateau.

THELIACEAE

THELIA LESCUREI Sull. E-W
 COCKE: UT5341; CARROLL: GE173 coll. Edward Clebsch, on soft sandstone at the start of the anticline. The plants correspond to Sullivan's plate. This species of doubtful standing was known in the state from Knox County, but the material had been lost by fire.

LESKEACEAE

**THUIDIUM ALLENI* Ausl. E
 WHITE: UT5172 det. H. A. Crum. On the eastern part of the Highland Rim in a *Quercus lyrata* swamp.

THUIDIUM PYGMAEUM B. S. G. E
 GILES: UT486. This station in the southern part of the Highland Rim appears to be as far south as the species has been found.

THUIDIUM MICROPHYLLUM (Sw.) Best W
 HOUSTON: WO18; WEAKLEY: GE145; LAKE: RL21, RL22, RL23; LAUDERDALE: GE163. These collections indicate that this

species is more common in the western than in the eastern part of the state.

**LESKEA AUSTRALIS* Sharp

W

HARDEMAN: GE94. Sharp in Grout (1928-1940) gave Florida to Texas as its range. The county named is on the southern border of the state.

LESKEA POLYCARPA (Hedw.)

M-W

MONTGOMERY: 179, 1005; HARDEMAN: GE106, GE105. Here reported for the second time for the state (see Quarterman, 1949). The plants grew on bases and trunks of trees in swampy or intermittently inundated woods.

ANOMODON VITICULOSUS (Hedw.) Hook. & Tayl.

E-W

GILES: GE190; DICKSON: GE119. These are additional reports from the Highland Rim. In the eastern part of the state it was known only from the northern section of the Ridge & Valley province.

HELODIUM PALUDOSUM (Sull.) Aust.

W

HARDEMAN: GE104, UT4950. Here is a second station in the state for this species whose principal range lies farther north. Fulford & Shacklette (1942) reported it for Kentucky.

FABRONIACEAE

SCHWETSCHKEOPSIS DENTICULATA (Sull.) Broth.

W

LAWRENCE: GE83. On the Highland Rim near the southern border of the state.

ENTODONTACEAE

**ENTODON COMPRESSUS* (Hedw.) C. Müll.

M

MONTGOMERY: 894, 1008. This report represents an extension of its known range from Ohio in the north and Missouri in the west.

ENTODON DRUMMONDII (B. S. G.) J. & S.

E

FRANKLIN: S24. On the southeastern extreme of the Highland Rim. Most of the previous reports of it in the state are from the Ridge & Valley province.

AMBLYSTEGIACEAE

LEPTODICTYUM RIPARIUM forma *FLUITANS* (L. & J.) Grout

W

CHESTER: GE184. The second report for the state of this form of a variable species.

SCIAROMIUM LESCURI (Sull.) Broth.

E

RHEA: GE18; FRANKLIN: S22, S 43. These records extend its range westward in the state to the escarpment of the Appalachian Plateau

CALLIERGON CORDIFOLIUM (Hedw.) Lindb. E
 GREENE: UT5317. The second station in Tennessee for this northern species. It lies, like the first, in the eastern extreme of the state.

BRACHYTHECEACEAE

BRACHYTHECIUM RIVULARE B. S. G. E
 WHITE: GE123; FRANKLIN: S61. Many leaves of the plants in these two collections differ in one of the key characters given for the species by Conrad (1944), and found in other material collected in the state, by having alar regions that are strongly colored instead of colorless.

BRACHYTHECIUM PLUMOSUM (Hedw.) B. S. G. M
 MONTGOMERY: 871. While this species is generally distributed in the eastern half of the state, it is quite rare in the section indicated.

BRACHYTHECIUM CAMPESTRE Br. & Sch. E
 MONROE: U55, U119, U130. Sharp (1942) reported this northern species for Cocke County. These records from the Unicoi Mountains show it farther southwest in the Blue Ridge Province.

PLAGIOTHECIACEAE

PLAGIOTHECIUM SYLVATICUM (Brid.) B. S. G. E-M-W
 MONROE: U59, U81, U84, U121; PICKETT: GE12; MONTGOMERY: 949; HARDEMAN: GE109. These and previous collections show this species present in most of the major provinces of the state. It seems, however, to occur frequently only at high latitudes of the Unicoi Mountains in Monroe County.

PLAGIOTHECIUM STRIATELLUM (Brid.) Lindb. E
 MORGAN: UT 5128. Known previously in the state only from the high mountains it is here reported from the Appalachian Plateau.

PLAGIOTHECIUM ELEGANS (Hook.) Sull. E
 MONROE: U99, U100; OVERTON: CP13 coll. H. C. Phillips; FRANKLIN: S7. This indicates wider distribution of the species in the mountains of the Blue Ridge Province as well as on the Appalachian Plateau in the state.

PLAGIOTHECIUM MICANS var. *FULVUM* (Hook. & Wils.) Paris. E
 COFFEE: GE45. This southern variety was heretofore known in the state from the eastern mountains and is here recorded from the southeastern section of the Highland Rim.

HYPNACEAE

HYPNUM FERTILE Sendt. E

MONROE: U21, U65. This species is found in Tennessee only along the eastern state-line mountain ridge.

BROTHERELLA RECURVANS (Mx.) Fleisch. W
LAKE: RL25. Known before in the state only from mountain and elevated regions it is recorded here from wooded shoreland of Reelfoot Lake near the Mississippi River. The station probably lies on the southwestern border of its range.

BROTHERELLA TENUIROSTRIS (Schimp.) Broth. M-W
MONTGOMERY: 974; LAKE: RL17, RL32, RL36. Former records showed this species only in the far eastern part of the state. At Reelfoot Lake in Lake County it was more abundant than the preceding.

***HOMOMALLIUM INCURVATUM* (Schrad.) Schimp. E
CARTER: UT967 coll. A. J. Sharp, duplicate seen by E. B. Bartram. Using the name under the authority of Loeske instead of Schimper, Grout (1928-1940) says of this species that "it is reported from Newfoundland in Barnes & Heald's Key, but neither Macoun in his Catalogue of Canadian Plants nor Brotherus in Engler & Prantl mention it as American and I have been unable to find an American specimen." Based on that statement it seems safe to call this the first report supported by collection material for North America. The site of the collection is on Laurel Creek above Hampton.

BRYACEAE

ORTHODONTIUM PELLUCENS (Hook.) B. S. G. E
SEVIER: SM23. Grout (1928-1942) states: "This species was recognized in sterile material sent by Sharp from Sevier County (1937)." On October 13, 1946, A. J. Sharp took the writer to the collection site and found the plants with abundant sporophytes in various stages of maturity.

POHLIA NUTANS (Schreb.) Lindb. E-M
MONROE: U78, U98, U127; FRANKLIN: S2; COFFEE: GE34; STEWART: WCB24. These and prior records indicate a general distribution of this species on the Highland Rim and eastward in the state. They also suggest that it will be found in states south of Tennessee.

BARTRAMIACEAE

**PHILONOTIS CAESPITOSA* Wils. E
CUMBERLAND: UT51T6, duplicate examined by Seville Flowers. While the two varieties *adpressa* and *laxa* were known in the state from the eastern mountains, here the first report of the species is made, based on material from the Appalachian Plateau.

**PHILONOTIS FONTANA* var. *PUMILA* Brid.

E

SEVIER: UTM-421. The species but not the variety was reported by Sharp (1939) for the eastern mountains.

EPHEMERACEAE

**EPHEMERUM SERRATUM* (Hedw.) Hampe

M

MONTGOMERY: 835, 840, 846. According to the description of its range by Grout (1928-1940) this is a slight extension southward from Ohio. Patterson (1950) gave the first report of it for Virginia. Only the variety *minutissima* was previously known from Tennessee.

EPHEMERUM SPINULOSUM var. *HYSTRIX* (Lindb.) Grout

M

MONTGOMERY: 964. Previously known from the Appalachian Plateau and here reported from the northwestern part of the Highland Rim. It was collected on the bank of an intermittent water course in woods on undissected land.

APHANORRHAGMA SERRATUM (Hoofl. & Wils.) Sull.

E

KNOX: coll. Hobart Hansard Nov. 1952. While this species is fairly common in the northwestern part of the Highland Rim, reports of it from the eastern part of the state are scarce.

**FUNARIA SERRATA* Brid.

E-W

BRADLEY: UT4919; COFFEE: UT4933; WAYNE: UT4943; McNAIRY: UT4941; FAYETTE: UT4945. This is a distinctly southern species and the counties listed, with the exception of Coffee County, are spaced along the southern border of the state adjacent to the area of its already known distribution.

**ENTOSTHODON DRUMMONDII* Sull.

E

COFFEE: UT4934. This is also a southern species reported here just north of its published range.

POLYTRICHACEAE

POGONATUM PENSILVANICUM (Hedw.) Paris

E-M-W

MONROE: U2; OVERTON: CPI coll. C. H. Phillips; BEDFORD: GE28; MONTGOMERY: 838; STEWART: WO11. The known range of this species in the state is enlarged and includes the Nashville Basin and the northwestern part of the Highland Rim.

POGONATUM BRACHYPHYLLUM (Rich.) Beauv.

M-W

STEWART: WCB35; BENTON: UT4952; CHESTER: GE115; MADISON: UT4949; FAYETTE: UT4947. According to present information the ranges of the two species of *Pogonatum* in Tennessee overlap in only two counties in the northwestern Highland Rim. *P. pensilvanicum* has the eastern, *P. brachyphyllum* the western distribution.

**Polytrichum juniperinum* var. *alpestre* B. S. G. E
CUMBERLAND: UT5019, on conglomerate boulder; OVERTON:
CP22 coll. H. C. Phillips, on sandy soil. Both stations are on the
Appalachian Plateau in Tennessee. Near-by states from which this
northern variety has been reported are North Carolina (Grout, 1928-
1940), Virginia (Patterson, 1940, 1950), and Ohio (Wareham, 1941).

ANTHOCEROTACEAE

Anthoceros punctatus L. W
HENDERSON: GE57; LAUDERDALE: UT4945. Added to Mont-
gomery County (Clebsch, 1947) these give evenly spaced stations for
this species in the western half of the state.

Notothylas orbicularis (Schwein.) Sull. E
FENTRESS: UT51T8; WHITE: UT51T3. Like most of its records
in the state these are from the northern part of the Appalachian
Plateau. Its distribution in Tennessee needs further study.

SUMMARY

One moss, *Homomallium incurvatum*, is reported for the first time
from North America. Eight liverworts *Cephalozia Lammersiana*,
Lophocolea minor, *Lophozia Helleriana*, *Metzgeria furcata aeruginosa*,
M. pubescens, *Plagiochila Smalli*, *Riccia membranacea*, *R. Sullivantii*,
2 peat mosses, *Sphagnum cuspidatum*, *S. recurvum*, and 12 mosses,
Entodon compressus, *Entosthodon Drummondii*, *Ephemerum serratum*,
Fissidens adiantoides, *F. Andersoni*, *Fontinalis disticha*, *Funaria
serrata*, *Leskea australis*, *Philonotis caespitosa*, *P. fontana pumila*,
Polytrichum juniperinum alpestre, *Thuidium Alleni*, are reported for
the first time from Tennessee. Notes on extension of range within
the state are given for 96 additional liverworts, peat mosses, and
mosses that have been reported before from Tennessee. From a group
known previously only from the eastern high mountains 7 have their
known ranges extended further southwest on the state-line ridge; 13,
to the Appalachian Plateau; 2, to the Highland Rim, and 3 to West
Tennessee.

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- CLARKSVILLE, TENN.

Hamilton McSparrin Gamble*

PATTIE H. CHRISMAN

Hamilton McSparrin Gamble was born at Moorefield, Virginia, October 25, 1838, and practically his whole life was spent in the town of his nativity. He was a son of James Carr Gamble and Mrs. Elizabeth Maria Williams Gamble. From his early boyhood he was of a studious turn of mind and a lover of nature; and many hours and days he spent with rod and gun along the banks of the beautiful South Branch of the Potomac, or wandering among the hills and mountains of his native county, enjoying more the great beauties of mountain, forest and stream than the sport of hunting or fishing. For he was one of those of whom our American poet, Bryant, spoke, when he wrote:

"To him, who in the love of nature,
Holds communion with her visible forms,
She speaks a various language."

In 1853, when quite a youth, he went to Lexington to become a student in the Virginia Military Institute, under the direct supervision of his older brother, J. S. Gamble, who held a professorship in that institution. In 1856 J. S. Gamble having been appointed principal of Norfolk Academy at Norfolk, Va., H. McS. Gamble accompanied his brother there. In the winter of that year, J. S. Gamble died of typhoid fever, and in 1857 H. McS. Gamble went to Kalamazoo, Michigan, where he began the study of medicine under his brother-in-law, Dr. Foster Pratt. While living there and engaged in reading, preparatory to the practice of his chosen profession, he spent a certain part of his time in a drug store learning the practical part of pharmacy. In 1858 he went to Ann Arbor to attend the University of Michigan, where he began his medical course, and graduated in pharmacy in 1859. From there he went to Jefferson Medical College, Philadelphia, from which institution he graduated in March, 1861, just at the time when our land was plunged in the horrors of Civil War. He reached his home in Moorefield just before the marching orders for the local military forces were received, and at once enlisted as a private in the Hardy Blues, of which his four brothers were members, his oldest brother, M. W. Gamble, being the First Lieutenant. At the battle of Rich Mountain in Western Virginia the whole company was captured and sent home upon parole.

In April 1862 he was appointed by President Jefferson Davis a surgeon in the Confederate Army, and held his commission to the

*Contribution No. 70 from the Herbarium of West Virginia University.



Hamilton McSparrin Gamble

end of the great struggle. On June 28, 1863, during Lee's invasion of Pennsylvania, and while serving as surgeon of the Twenty-Fifth Virginia Infantry, he was commissioned by General Lee to take charge of the hospitals at Chambersburg, and upon Lee's retreat from Pennsylvania, he was taken by the Federal authorities and imprisoned at Fort Delaware, in violation of the rules of warfare. After being released he served as surgeon of one of the Louisiana regiments for a time, and then passed to the West where he became a surgeon under General John Hunt Morgan, and was with Morgan during his famous

raid across Ohio and Indiana in 1864. After the defeat and capture of Morgan he was again sent to Virginia, and from that time to the end served as a surgeon in the Army of Northern Virginia.

At the close of the war, Dr. Gamble returned to Moorefield, and took up the practice of medicine and surgery; and here with the exception of a short time spent in the States of Louisiana, Missouri, and Florida, the remainder of his life was given to the people of his native community. His surgical skill was known far and wide, and for a great many years he did nearly all the surgical work of the whole section, performing successfully almost every kind of operation known to the profession. During these years of his most active life, there were few, if any, homes in the area where he had not applied his professional knowledge to the relief of the sick or injured.

For years Dr. Gamble was French translator as well as a contributor of original articles to Gaillard's Medical Journal of New York; and for a number of years after Dr. Gaillard's death was assistant editor of the Journal. In this way, as well as from his great local reputation, he became known far and wide by the medical profession, and he took rank at the very top of the profession.

During the great revival of 1856-57 which swept over the whole country, Dr. Gamble united with the Presbyterian Church of Kalamazoo, and was a faithful member of that church for a great many years. Some years after his marriage, his wife being an Episcopalian, he went with her into the Episcopal Church, and was a devoted member of that communion to the time of his death, and he always had the simple faith of a little child.

During all of his later days, though not engaged in the active practice, he kept up, by reading and study, with the improvements and advances in medical science, and his advice and opinion were constantly sought by the active practitioners of the community as well as by large numbers of the older people who in their earlier days had known so well his reputation and skill.

In addition to his professional knowledge, his general education was of a high order; as a linguist he was a master of the French, German and Latin languages, and could read Greek, Italian and Spanish. West Virginia University bestowed upon him the honorary degree of Doctor of Philosophy on June 13, 1894.

He did considerable botanizing in connection with his enjoyment of nature and was quite familiar with the plant life of the beautiful valley of the South Branch of the Potomac, in Hardy, Grant, and Hampshire Counties. A plant collection of 157 species was donated to West Virginia University in 1891 and represents the oldest collec-

tions from that part of the State now in the State Herbarium. It was from specimens sent to Asa Gray that the location "W.Va." was credited for some species in the 6th edition of Gray's Manual.

He was united in marriage to Miss Elizabeth W. Wilson on Nov. 9, 1869. She died Sept. 9, 1881, and on Oct. 26, 1887, he was married to Miss Virginia I. Wilson. By his first marriage Dr. Gamble was the father of three children, the late H. Lisle Gamble, M.D., physician practicing in Moorefield, W.Va.; Roy H. Gamble, pharmacist, San Antonio, Texas; and Mrs. Ethel Holmes, San Francisco, California. He has two grandchildren, Chas. H. Gamble, California, and Miss Elizabeth Lisle Gamble, Moorefield, W.Va. Dr. Gamble died at Moorefield on March 27, 1917.

MOOREFIELD, W. VA.

Notes on Plants of the Eastern United States

F. R. FOSBERG

In the course of field observation and collecting of plants in various parts of the eastern United States, certain notes have accumulated which seem worth placing on record. Also, a number of names have been used in lists of determinations and in labelling specimens which should be published, even though, in some cases, study is continuing on the problems concerned. Taxa belonging to the genera *Equisetum*, *Setaria*, *Acer*, *Oenothera*, and *Hedyotis* are discussed in this paper.

EQUISETUM ARVENSE var. *BOREALE* (Bong.) Ledeb. Two Virginia collections of horsetails gave trouble when run through the key in the 8th edition of Grays Manual. The teeth on the lower stem-sheaths are dark brown but have white margins, leading to *E. pratense*. The size of the centrum of the stem is too large for *E. pratense* but too small for *E. arvense* as described in the Manual. One of the collections (Fosberg 34922) looks in cross section more like the figure given for *E. pratense*, the other (Fosberg 34902) like that for *E. arvense*. The upper parts of the stems are slightly scabrous. Comparison with material of both species in the U.S. National Herbarium showed that the plants are doubtless *E. arvense*. The scabrosity is not nearly enough for *E. pratense* and the white margins of the teeth of the stem-sheath are much too narrow. It is quite clear, though, that these white margins should not be used as a key character for *E. pratense*, as many specimens of *E. arvense* have at least narrow white margins.

The branchlets on both collections are constantly three-angled, making these plants go to var. *boreale*, although this variety is said by Fernald in the Manual to have a northern range. Examination of the material in the National Herbarium shows that not only these two collections but at least a dozen others from fairly southern localities seem to belong to it. Part of these are in the mountains, part in the Piedmont. The southern specimens of var. *arvense* were all from low elevations. The southern collections of var. *boreale* are as follows:

Pennsylvania: Lancaster Co., Haines Creek, Leeds in 1925.

Maryland: near Somerset, Maxon 6075; near Seat Pleasant, Van Eseltine 294.

District of Columbia: Potomac Flats, Dewey in 1901; High Island, Steele in 1906; Mt. Hamilton Tract, Leonard 10216.

Virginia: Fairfax Co., Potomac River near Seneca Dam, Palmer in 1904; Langley, Palmer in 1901. Fauquier Co., western slopes of

Bull Run Mts., Allard 1271, 6634, 8704. Shenandoah Co., Elizabeth Furnace, Massanutten Mts., Fosberg 34922. Madison Co., Hemlock Springs Overlook, Skyline Drive, Blue Ridge Mts., Fosberg 34902. All specimens cited are in the U.S. National Herbarium.

SETARIA FABERII Herrm. This large introduced species, resembling a gigantic version of *S. viridis*, has become widespread in the eastern half of the U.S., most of the collections being from 1945 on, though it was collected as early as 1932 in Missouri. It was observed to be very common along roadsides and in weedy cultivated ground in the Driftless Area of Wisconsin, west of Madison near the Wisconsin River. Seen at various localities during the field trip of the American Society of Plant Taxonomists, Sept. 6, 1953, led by Dr. N. C. Fassett, it was collected along a roadside in a cultivated area half way between Arena and Ridgeway, Iowa Co., Fosberg 34924 (US, Wis). This seems to be the first record from the state.

ACER NIGRUM Michx. f. As long as different species concepts exist there will not likely be complete agreement on the proper taxonomic treatment of the sugar maples. There are populations, large and small, of varying degrees of difference from each other, and of varying degrees of isolation from each other. Where they come in contact there is no doubt that introgression occurs. There is evidence that this has occurred in the past between populations now well isolated. For ample demonstration of this see Desmarais (Brittonia 7: 347-387, 1952).

It is necessary for anyone who is concerned with these plants either to make up his own mind as to what taxonomic disposition to make of them or to find someone's opinions with which he can agree. The common sugar maple and the black maple are recognizably distinct, but not in very fundamental characters and with much intergradation in some populations. I prefer to regard them as varieties of one species. Desmarais (op. cit.) considers them to be subspecies. For the collective species the earliest name seems to be *Acer nigrum* Michx. f. (1810), since Rousseau has demonstrated, satisfactorily, I think, that the long used name, *Acer saccharum* Marsh. was merely an error for *Acer saccharinum* L. Desmarais used *A. saccharum*, but without showing that Rousseau's conclusions were wrong.

Some years ago, looking for the earliest varietal epithet to use for the common sugar maple, I made the combination, *A. nigrum* var. *pseudoplatanoides* (Pax) Fosb. This was an error, as many years earlier, in 1812, Franz Schmidt, in his "Anleitung zur sichern

Erziehung und Vermehrung derjenigen Ahornarten, die allgemeine vermehret zu werden verdienen", a book which I have been unable to find in this country, treated this species collectively as *Acer saccharinum*, (pp. 43-45) and described two varieties of it, vars. *glaucum* and *viride*. Through the kindness of Dr. Hugh Iltis, Hansford Shacklette and A. D. Cotton, I was able to obtain photostatic copies and translation of the text and plates pertaining to this species. From the excellent plates there is no difficulty, whatever, in recognizing that Schmidt had in hand the sugar maple (his var. *glaucum*) and the black maple (his var. *viride*). According to Article 35 of the Stockholm Code, *Acer saccharinum* var. *viride* Schmidt, op. cit. Tab. IX becomes a synonym of *Acer nigrum* var. *nigrum*. For those who regard the sugar maple as a variety of the black maple, the following combination must be used:

ACER NIGRUM var. ***glaucum*** (Schmidt) Fosberg, new comb.

Acer saccharinum var. *glaucum* Schmidt, op. cit. Tab. VIII, 1812.

Acer saccharophorum Koch, Hort. Dendr. 80, 1853.

Acer nigrum var. *pseudoplatanoides* (Pax) Fosb., Castanea 6:117, 1941.

For the other principal subdivisions of this collective species, considered to be subspecies of *Acer saccharum* by Desmarais, the following combinations are necessary in *Acer nigrum*. His synonymy is correct in most cases and need not be repeated here. I would not agree with placing Schmidt's *Acer saccharinum* var. *viride* as a synonym of the common sugar maple, but place it with the black maple.

ACER NIGRUM var. ***schneckii*** (Rehd.) Fosberg, n. comb.

Acer saccharum var. *schneckii* Rehd., Trees and Shrubs 2:256, 1913.

ACER NIGRUM var. ***grandidentatum*** (T. & G.) Fosberg, n. comb.

Acer grandidentatum T. & G., Fl. N. Am. 1:247, 1838.

ACER NIGRUM var. ***floridanum*** (Chapm.) Fosberg, n. comb.

Acer saccharinum var. *floridanum* Champ., Fl. S.U.S. 81, 1860.

ACER NIGRUM var. ***leucoderme*** (Small) Fosberg, n. comb.

Acer leucoderme Small, Bull. Torr. Cl. 22:367, 1895.

ACER NIGRUM var. ***sinuosum*** (Sarg.) Fosberg, n. comb.

Acer saccharum var. *sinuosum* Sarg., Bot. Gaz. 67: 234, 1919.

The leaf form of this last is so strikingly distinct, being practically without teeth or secondary lobes, that it seems best to recognize it as variety distinct, though Desmarais made it a synonym of his subsp. *grandidentatum*. It is recognized that it occasionally, as in Oklahoma,

grows with var. *grandidentatum*, just as some of the other varieties grow together.

OENOTHERA ARGILLICOLA var. *PUBESCENS* Core and Davis, Castanea 18: 31, 1953.

Through the kindness of Miss Lena Artz, I was able to study a large colony of *O. argillicola* at Elizabeth Furnace, in the Massanutten Mts., Shenandoah Co., Va. Many of the plants examined, (represented by Fosberg 34813 and 34850), had the capsules, ovaries, hypanthium tubes, and exterior of calyces sparsely but conspicuously villous with long straight hairs. This presumably places them in var. *pubescens*, extending its range to Virginia from West Virginia.

In the key to *Oenothera* on p. 1063 of the 8th ed. of Grays Manual there are two places where this variety will throw the user off. The species of subg. *Onagra* are separated into two groups on whether the free tips to the sepals are in the bud closely connivent or parallel or are standing apart, in other words, erect or divergent. *O. argillicola* should have them erect. In the Elizabeth Furnace colony practically none of the plants had them really erect, and they ranged to a divergence of 45°, and from straight to incurved. If this pitfall were successfully avoided, the villous capsules would lead the unwary to *O. grandiflora* if the spreading bases to the capsules passed unnoticed. The plants in the colony had all the capsules observed divergent from the rachis at least 45°, which fact, with the smaller flowers, crowded linear-inaccolate leaves, short stigma lobes, and shale habitat, shows that they are not *O. grandiflora*.

To one accustomed to thinking of the Onagraceae as having regular flowers, another character of this plant came as a surprise, though it may be well-known to others. The flowers, in their androeceum, are strongly zygomorphic. Though the stamens are attached all around the summit of the hypanthium tube, they bend sharply downward, then curve outward again, like the tines of an old-fashioned pitchfork, though more numerous. The style also bends downward, but this is probably because of the weight of the stigma.

This variety is one that seems to be favored by disturbance, as it is very abundant on the ledges and cracks of road cuts in shale banks, and especially on the talus that accumulates at the bottom of these cuts. This seems further proof of the idea, suggested by Dr. Wherry (Castanea 18: 65, 1953), that the shale-barren plants are such because they cannot meet the competition in better habitats. This loose talus supports few other species, while on the shale slopes above, which are older, there are many other plants and far fewer *Oenotheras*.

Eriogonum alleni, in Edinburg Gap, Massanutten Mts., was also observed to behave in the same way.

HEDYOTIS L. As I have pointed out several times earlier (Bishop Mus. Occ. Pap. 13: 246-247, 1937; Virginia Jour. Sci. 2: 110-111, 1941; Lloydia 4: 287-290, 1941; Bishop Mus. Bull. 174: 1-102, 1943) the genera *Hedyotis* L., *Houstonia* L., and *Oldenlandia* L. do not differ sufficiently to be maintained as separate genera when looked at throughout their ranges. The differences in habit, which are what have led most people to maintain them as separate genera, break down, especially among the Mexican and eastern Atlantic species. Floral differences are neither striking nor constant. The fruit and seed characters on which the genera have been maintained technically are of a rather trivial nature and seem more appropriately those of subgenera or sections. A complete revision or monograph of these plants has long been contemplated, but time has not been available for much work on it. Meanwhile, there has been opportunity to make rather extensive observations on certain of the eastern U.S. species, and some material has been annotated. It has become obvious that several of what have long been considered species are neither very distinct nor very sharply separated from each other. Since there will not likely be opportunity, very soon, to finish this work, it seems worth while to put my present ideas on the classification of the eastern U.S. species on record and to publish the names that I have been using in annotating specimens. For the present the key in the 8th Edition of Gray's Manual of Botany, 1950, seems adequate to identify most specimens, so long as the necessary adjustments in nomenclature are made. Some of the difficulties encountered in using this key are exactly those which lead me to treat the entities in the *Hedyotis purpurea* and *Hedyotis caerulea* complexes as varieties of these two species.

In the following synopsis much of the synonymy is omitted, as it is given fairly completely in Standley's treatment in the North American Flora. Only the entities found east of the Mississippi River are included. Certain notes on occurrence, taxonomy and nomenclature are included under the species concerned. Some may question the advisability of recognizing color forms by naming them. It seems clear that if they are to be referred to they may conveniently have names. It may be pointed out that quadrinomials can be reduced, when used, to ternary combinations. They are here given in full for clarity. They need not be used by anyone who does not need to refer to them.

HEDYOTIS CAERULEA (L.) Hook., Fl. Bor. Am. 1: 286, 1833. Three eastern varieties of this are recognized. The status of *Houstonia caerulea* var. *piersii* Barbour, Proc. & Trans. N. S. Inst. Sci. 11: 558, 1908, from Nova Scotia, has not been determined, as the type has not been seen. Other material from the region seems to be var. *caerulea*.

HEDYOTIS CAERULEA var. CAERULEA

Houstonia caerulea L. Sp. Pl. 105, 1753.

Houstonia linnaei Michx., Bor. Am. 1: 84, 1803.

Houstonia linnaei var. *elatio*r Michx., l.c.

Hedyotis caerulea Hook., Fl. Bor. Am. 1: 286, 1833.

Oldenlandia caerulea Gray, Man. ed. 2, 174, 1856.

The common bluets or quaker ladies belong to this variety. They are found, usually in neutral to acid situations from Nova Scotia, New Brunswick and Quebec, westward to southern Ontario, Illinois, Wisconsin and Missouri, south throughout the eastern states to Georgia, Alabama and Arkansas.

HEDYOTIS CAERULEA var. CAERULEA f. *albiflora* (Millsp.) Fosberg, n. comb.

Houstonia caerulea f. *albiflora* Millsp., Fl. W. Va. 375, 1892.

This is merely a white flowered form of the common bluets, not displaying the additional characteristics of var. *faxonorum*.

HEDYOTIS CAERULEA var. *faxonorum* (Pease & Moore) Fosberg, n. comb.

Houstonia caerulea var. *faxonorum* Pease & Moore, Rhodora 9: 210, 1907.

Houstonia faxonorum (Pease & Moore) Fern., Rhodora 29: 187, 1927.

Houstonia caerulea var. *toxonorum* Stevens, Ill. Guide to Fl. Pl. 582, 1910 (sphalm.).

This white-flowered form is, as Fernald says, slightly more fleshy than var. *caerulea*, and it has a tendency for the internodes of the basal rosette to be elongate, and for the leaves above the rosette to be developed. The seeds are also notably larger. It is, however, not distinguished easily from the typical variety. The situation is further complicated by the fact that in more than one part of New England there has apparently been extensive hybridization between this and var. *caerulea*. The white flowered plant has generally been regarded as principally a high altitude plant, and even to be endemic to the White Mts. Fernald has reported it from St. Pierre and Miquelon. In central Connecticut, near New Milford, fields of bluets were observed which ranged in color from deep lavender to white, and whose vegetative form represented all gradations from that of var

caerulea to that of var. *faxonorum* (Fosberg 23310, 23311, 30917). Several other populations of this type, but not so extreme, were observed farther north in Connecticut (Fosberg 30910, 30912, 30913). A similar hybrid swarm may be represented by a New Hampshire collection (Moldenke and Moldenke 9484, in Herb. Gothenburg).

HEDYOTIS CAERULEA var. **MINOR** (Michx.) T. & G., Fl. N. Am. 1: 39, 1931.

Houstonia linnaei var. *minor* Michx., Fl. Bor. Am. 1: 85, 1803.

Houstonia caerulea var. *minor* Pursh, Fl. Am. Sept. 1: 106, 1814.

Hedyotis crassifolia Raf., Fl. Ludov. 77, 1817.

Houstonia patens Ell., Bot. S. C. & Ga. 1: 191, 1821.

Oldenlandia patens Chapm., Fl. S. U.S. ed. 2, 625, 1883.

Houstonia minor Britt., Mem. Torr. Cl. 5: 302, 1894.

It is with some hesitation that I accept Michaux's epithet for the common southern plant with dark bluish flowers with pink or purplish eye, since the original diagnosis is not at all adequate, but there seems to be no other form from this area that it could be, so it is probably safe to use it until the type can be examined. I previously, along with everyone else, considered it a distinct species, but the differences, other than flower color, are so tenuous that it is difficult to be certain of a determination. On many plants the basal rosette is not well developed—its internodes may be somewhat elongate—and the corollas are generally shorter than in var. *caerulea*, but there is some overlapping, on the one hand with var. *caerulea*, on the other with var. *minima*.

It is found in the southeastern states, north to southeastern Virginia and farther north in the Mississippi Valley to Tennessee, Illinois, and Missouri.

HEDYOTIS CAERULEA var. **MINOR** f. **benkei** Fosberg, n. name.

Houstonia pusilla f. *albiflora* Standl., Rhodora 34: 177, 1932 (non

Hedyotis caerulea f. *albiflora* (Millsp.) Fosc.)

Since there cannot be two subdivisions in a species with the same name based on different types this is renamed for H. C. Benke, collector of the type specimen.

HEDYOTIS CAERULEA var. **MINIMA** (Beck) Fosberg, n. comb.

Houstonia minima Beck, Am. Jour. Sci. 10: 262, 1826.

Hedyotis minima T. & G., Fl. N. Am. 2: 38, 1841.

Oldenlandia minima Gray, Man., ed. 2, 173, 1856.

This, again, overlaps in corolla size with var. *minor* and runs right into it in size and shape of calyx lobes, which tend to be large and lanceolate, so is best considered a variety of *H. caerulea*. It is generally a smaller plant than var. *caerulea* and often smaller than

var. *minor*. It is found in the central states south to Mississippi, Arkansas, and Texas.

HEDYOTIS MICHAUXII Fosb., Am. Midl. Nat. 29: 786, 1943.

Houstonia serpyllifolia Michx., Fl. Bor. Am. 1: 85, 1803.

Hedyotis serpyllifolia T. & G., Fl. N. Am. 2: 39, 1841 (non *H. serpyllifolia* Poir. 1813).

Houstonia tenella Pursh, Fl. Am. Sept. 106, 1814 (non *Hedyotis tenella* Hochst. nec Miq. ex Hook. f.).

This plant, certainly one of the showiest in the genus, is common at high altitudes in the Appalachians, especially in the Smokies. It has been found northward to Pennsylvania. The flowers are a bright blue, and though solitary on long pedicels, they are produced in masses that are very colorful and attractive.

HEDYOTIS MICHAUXII f. *alba* (Alex.) Fosberg, n. comb.

Houstonia serpyllifolia f. *alba* Alexander, Castanea 5: 93, 1940.

A white-flowered form, apparently uncommon.

HEDYOTIS procumbens (Gmel.) Fosberg, n. comb.

Anonymos procumbens Walt., Fl. Car. 86., 1788 (illegitimate, see Art. 78, International Code).

Poiretia procumbens J. F. Gmelin, Syst. Nat. 2: 263, 1791.

Houstonia rotundifolia Michx., Fl. Bor. Am. 1: 85, 1803.

Anotis rotundifolia DC., Prodr. 4: 433, 1830.

Hedyotis veronicaefolia Steud., Nom. ed. 2, 1: 729, 1840.

Oldenlandia rotundifolia Gray, in Chapm. Fl. S. U.S. 180, 1860.

Houstonia procumbens (Walt.) Standl., N. Am. Fl. 32: 26, 1918.

This species occurs on the coastal plain from South Carolina to Florida and westward to Louisiana, with by far the most collections from Florida. The epithet *procumbens* must date from Gmelin, as combinations with *Anonymos* are illegitimate, and Gmelin was the first to propose a proper binomial with a diagnosis. His genus *Poiretia* contained only this species and *P. erecta*, which was Walter's *Anonymos erecta*, synonymous with *Hedyotis caerulea*. The name *Hedyotis procumbens* Wall., the only apparent earlier homonym, seems never to have been published except in synonymy.

HEDYOTIS PURPUREA (L.) T. & G., Fl. N. Am. 2: 40, 1841.

Houstonia purpurea L., Sp. Pl. 105, 1753.

This common eastern species is composed of a maze of varieties, most of which are commonly called species, but which give trouble if examined more than superficially. Some of the boundaries between them are sharper than others, and, curiously enough, the same two

varieties may remain sharply distinct in certain localities and blend into each other elsewhere.

HEDYOTIS PURPUREA var. **PURPUREA**

This, the plant with usually broadly ovate, subcordate, three- or five-nerved leaves, is generally found in fairly good soil at moderate and low altitudes throughout the central and southern part of the eastern United States, except Florida, west to Iowa, Oklahoma, and Texas.

HEDYOTIS PURPUREA var. **PURPUREA** f. **pubescens** (Britt.) Fosberg, n. comb.

Houstonia purpurea var. *pubescens*, Britt., Mem. Torr. Cl. 4: 125, 1894.

Houstonia purpurea f. *pubescens* (Britt.) Fern., Rhodora 38. 444, 1936.

Conspicuously pubescent individuals are found quite commonly growing with the ordinary ones of f. *purpurea* with almost glabrous stems. If they need to be referred to, the above name is correct.

HEDYOTIS PURPUREA var. **montana** (Small) Fosberg, n. comb.

Houstonia montana (Chickering) Small, Fl. S.E.U.S. 1325, 1903.

This is a relatively dwarfed, compact plant with short internodes, somewhat larger corollas and fruits which are borne in a relatively condensed or even subcapitate, few-flowered inflorescence. It is known only from the higher mountains of North Carolina and Tennessee.

Small gives the name *H. purpurea* var. *montana* Chickering as a synonym, and cites Chickering as parenthetical author when he makes a species of it. However, Chickering apparently published no such name. Therefore the epithet originated with Small as far as published literature goes.

HEDYOTIS PURPUREA var. **calycosa** (Gray) Fosberg, n. comb.

Hedyotis lanceolata Poir., in Lam. Encycl. Suppl. 3: 14, 1813.

Hedyotis frankii Presl, Bot. Bemerk. 86, 1844.

Houstonia purpurea var. *calycosa* Gray, Syn. Fl. 1 (2): 26, 1884.

Houstonia calycosa Mohr, Contr. U.S. Nat. Herb. 6. 739, 1901.

Houstonia lanceolata (Poir.), Britt., Man. 861, 1901.

In vegetative form this variety is almost exactly intermediate between var. *purpurea* and var. *longifolia*, and tends to vary from one to the other (see Fernald, Rhodora 42, 361, 1940). Its large often outwardly curved calyx lobes are its principal distinguishing feature, and these vary from little longer than in var. *purpurea* to the conspicuous lanceolate ones of the plant described by Presl as *Hedyotis frankii*.

A specimen of what may be the type collection of *H. frankii*, from Miami, Ohio, Dr. Frank in 1855 is in the Hamburg Herbarium. It belongs, without question, to this variety, but represents an extreme form.

Found from Georgia to Oklahoma, and northward to Missouri, Illinois, Ohio, West Virginia, and southern Maine. It is much commoner in the Mississippi Valley, becoming quite rare east of the Appalachians, especially northward.

HEDYOTIS PURPUREA var. *CALYCOSA* f. *albiflora* (Standl.) Fosberg, n. comb.

Hedyotis lanceolata f. *albiflora* Standl. Rhod. 34. 177, 1932.

White-flowered forms occur in most or all of the varieties of *H. purpurea*. The one in var. *calycosa* may be referred to as f. *albiflora*, since it has been so recognized formally by Standley.

HEDYOTIS PURPUREA var. *ciliolata* (Torr.) Fosberg, n. comb.

Houstonia canadensis Willd. ex R. & S., Syst. 3: 527, 1818.

Houstonia ciliolata Torr., Fl. U.S. 1: 173, 1824.

Hedyotis ciliolata Torr. ex. Spr., Syst. 4: 40, 1827.

Oldenlandia purpurea var. *ciliolata* Gray, Man. ed. 2, 173, 1856.

Houstonia purpurea var. *ciliolata* Gray, Man. ed. 5, 212, 1868.

Hedyotis canadensis (Willd.) Fosc., Va. Jour. Sci. 2: 110, 1941.

Baffled by the way the distinctions between this and var. *longifolia* break down in populations of plants in Indiana, Standley (Field Mus. Pub. Bot. 11: 216, 1936) merged *Houstonia longifolia* Gaertn. in *H. canadensis* Willd. ex R. & S. I followed this course in 1941 and in naming material for some time. However, study of a good range of specimens from over the greater part of the eastern United States forces me to the conclusion that the characters of the two, such as they are, break down only locally. This variety, generally northern in range, has throughout its life a well developed basal rosette with the leaves ciliate with conspicuous hairs. In the more southern var. *longifolia* the rosette is never very large and does not persist after the plant is mature, nor is the ciliation conspicuous.

This variety is northern in distribution, occurring from Saskatchewan, North Dakota, Michigan, and Ontario southward through western New York to central Pennsylvania, and, in the Mississippi Valley to Tennessee and Missouri.

HEDYOTIS PURPUREA var. *longifolia* (Gaertn.) Fosberg, n. comb.

Houstonia longifolia Gaertn., Fruct. 1: 226, 1788.

Hedyotis longifolia Hook., Fl. Bor. Hm. 1: 286, 1834.

Oldenlandia purpurea var. *longifolia* Gray, Man. ed. 2, 173, 1856.

Houstonia purpurea var. *longifolia* Gray, Man. ed. 5, 212, 1868.

This form was reduced to *Houstonia canadensis* by Standley because the characters separating it from what is here called *Hedyotis purpurea* var. *ciliolata* break down where their ranges overlap in the Middle West. However, the lack of a basal rosette of larger leaves at maturity seems to be a sufficiently important character to maintain it in varietal status. The intermediate forms mentioned by Standley doubtless result from introgression where the plants grow together. In the Virginia Piedmont var. *longifolia* occupies the same general range as var. *purpurea*, but the latter is usually found in rich bottomlands, old fields, mature woods, openings, and generally better habitats, while var. *longifolia* grows usually in rocky places, eroded banks, gully walls, badly over-grazed pastures, and other relatively sterile niches. There is, thus, rather little immediate contact and little evidence of intergradation. The general range of the variety is southern Canada west to Saskatchewan, and throughout the entire eastern United States west to the edge of the dry plains, but not extending to Florida or Louisiana.

HEDYOTIS PURPUREA var. *setiscaphia* (Carr) Fosberg, n. comb.

Houstonia setiscaphia Carr, *Rhodora* 46: 309, 1944.

So far as known a local form endemic to the Lee County bogs in the central Blue Ridge of Virginia, but other available collections of *H. purpurea* from elsewhere in the Virginia Mts. are still awaiting critical study and may well show that this plant is not so restricted or that it blends completely with one of the other varieties. The Appalachian members of the var. *longifolia*-var. *tenuifolia* complex are not yet clarified.

HEDYOTIS PURPUREA var. *tenuifolia* (Nutt.) Fosberg, n. comb.

Houstonia tenuifolia Nutt. Gen. 1: 95, 1818.

Houstonia nuttalliana Fosc., Va. Jour. Sci. 2: 111, 1941.

Hedyotis longifolia var. *tenuifolia* T. & G., Fl. N. Am. 2: 40, 1841.

Oldenlandia purpurea var. *tenuifolia* Gray, ex Chapm., Fl. S. U.S. 181, 1860.

Houstonia longifolia var. *tenuifolia* Wood, Class-Book ed. 1861: 403, 1861.

Houstonia purpurea var. *tenuifolia* Gray, Syn. Fl. N. Am. 1 (2): 26, 1884.

In its extreme form this plant is a slender, erect, non-caespitose herb, with capillary pedicels, open inflorescence, and smaller fruits than are found in other varieties. It is so far, however, impossible to draw any sort of sharp line between it and typical caespitose var.

longifolia. Much of the material referred to *Houstonia tenuifolia* in herbaria and local floristic lists cannot be separated from var. *longifolia*. In my opinion var. *tenuifolia* should be restricted to those individuals with very slender pedicels and fruits not over 2.5 (usually 2) mm. wide. The leaves are commonly very narrow, but this is the least reliable of its characters. It is found in the southeastern Piedmont and southern Appalachians, and is said to occur as far northward as Pennsylvania and as far west as Missouri, Oklahoma and Texas.

HEDYOTIS PURPUREA var. TENUIFOLIA f. *leucantha* (Standl.) Fosberg, n. comb.

Houstonia tenuifolia f. *leucantha* Standl., *Rhodora* 34: 177, 1932.
A white flowered form.

HEDYOTIS PURPUREA var. *floridana* (Standl.) Fosberg, n. comb.

Houstonia floridana Standl., *N. Am. Fl.* 32: 36, 1918.

A plant with narrowly linear leaves, as in var. *tenuifolia*, but with stouter and shorter pedicels, these commonly less than 1 cm. long, mostly much less, irregular in length; the upper part of the plant tends to be open and diffusely cymose.

Local in the pinelands and hammocks of southeastern Florida, most of the collections being from about Miami. Confused by Small with the narrow-leaved variety of *H. nigricans* (his *Houstonia filifolia*) but readily distinguished by the orbicular rather than cylindrical fruit, and by the very open, diffuse inflorescence.

HEDYOTIS NIGRICANS (Lam.) Fosc., *Lloydia* 4: 287, 1941.

Gentiana nigricans Lam., *Encycl.* 2: 645, 1786.

Houstonia angustifolia Michx., *Fl. Bor. Am.* 1: 85, 1803.

Hedyotis stenophylla T. & G., *Fl. N. Am.* 2: 41, 1841.

Houstonia nigricans (Lam.) Fern., *Rhodora* 42: 299, 1940.

This is a complex species, generally southern in distribution, with, besides the varieties listed here, several more westward in Texas and Mexico. Some of the varieties resemble extreme forms of varieties of *H. purpurea* but can be distinguished easily by the cylindrical fruit and exserted stamens of *H. nigricans*, contrasted with orbicular fruit and included stamens of *H. purpurea*. It also has more fimbriate stipules and a much heavier root than the latter, and reduced branchlets or fascicles of leaves in the leaf axils are much more common.

HEDYOTIS NIGRICANS var. NIGRICANS

The typical variety of the species is found in the southeastern states and north, in the Mississippi Valley to Michigan, Illinois, Iowa, and Nebraska, and westward to Texas and Mexico. It is erect, branched from the base, and has linear-lanceolate leaves.

HEDYOTIS NIGRICANS var. *FILIFOLIA* (Chapm.) Shinnery, Field & Lab. 17: 168, 1949.

Oldenlandia angustifolia var. *filifolia* Chapm., Fl. S. U.S. 181, 1860.

Houstonia angustifolia var. *filifolia* Gray, Syn Fl. 1 (2): 27, 1884.

Houstonia filifolia (Chapm) Small, Fl. S.E.U.S. 1109, 1338, 1903.

Houstonia tenuis Small, l. c.

This is a very narrow leaved extreme, found from Florida to Texas.

HEDYOTIS NIGRICANS var. *pulvinata* (Small) Fosberg, n. comb.

Houstonia pulvinata Small, Bull. N.Y. Bot. Gard. 1: 289, 1899.

This variety is close to var. *filifolia*, but has a conspicuously condensed habit. It inhabits sandy places and is confined to Florida.

HEDYOTIS UNIFLORA (L.) Lam., Tabl. Encycl. 1: 272, 1791.

Oldenlandia uniflora L., Sp. Pl. 119, 1753.

Oldenlandia glomerata Michx., Fl. Bor. Am. 1: 83, 1803.

Hedyotis virginica Spreng., Pug. 2: 34, 1815.

Hedyotis glomerata Ell. Bot. S.C. & Ga. 1: 188, 1816.

This and the two following species are members of the subgenus *Oldenlandia*, which closely resembles subg. *Houstonia* but has tiny tubular or rotate corollas and the hilum of the seeds not at all sunken. Many of its members are common tropical weeds. This species has a very misleading name, as the flowers are glomerate in the leaf axils, rather than solitary. It is found on the Coastal Plain from Long Island to Florida and west to Texas.

HEDYOTIS BOSCH DC., Prodr. 4: 1830.

Oldenlandia boschii Chapm., Fl. S. U.S. 181, 1860.

Found in the southeastern states and northward to southeastern Virginia, Tennessee and southeastern Missouri.

HEDYOTIS FASCICULATA Bertol., Mem. Accad. Bol. 2: 306, 1850.

Oldenlandia littoralis Mohr, Bull. Torr. Cl. 24: 27, 1897.

Oldenlandia fasciculata (Bertol.) Small, Fl. S.E.U.S. 1106, 1903.

Found near the coast from Florida to Texas.

FALLS CHURCH, VIRGINIA

NOTES and NEWS

AN EXTRAORDINARY PLANT IN POLK COUNTY, NORTH CAROLINA.—

When I lived near Washington, D.C., I used to journey to Difficult Run near the Great Falls of the Potomac to inspect a small colony of river-weed, *Podostemum ceratophyllum* Michx. This remarkable plant was growing attached to rocks over which a stream of swift water was flowing. After moving to Polk County, North Carolina, it was no longer necessary to hunt for the plant. The county is crossed by many swift streams and rivers of clear mountain water flowing over rock ledges and shallow rock-strewn shoals producing ideal conditions for the development of this unusual plant. The masses of stone covering acres of the various stream beds is covered with this peculiar plant. At first the slender stems of the plant cross the stone surfaces in an irregular open pattern but later branching covers the rock with a coarse felt-like layer that completely hides the stone. One cannot help but wonder about the sex life of such a plant and how a seed can germinate and attach the resulting plant to a smooth rock surface over which is flowing a swift current of water.

It has been suggested that the seeds of the plant may germinate in the felt-like covering of the rocks during periods of low water when they are out of water but still moist. This may be true in some instances but it does not explain why the best developed plants having flowers and fruits are found on rocks which are always under a good layer of swift water. My observations would indicate that the fruits produced in swift water are carried downstream. Probably a very small percent of these lodge in a crevice or in the strands of an alga where germination is possible. Seeds lodging in the dense mass of the mother plant would probably perish from competition. This is pure speculation and guessing. A careful scientific study should be undertaken to solve this mystery of nature.—OLIVER M. FREEMAN, TRYON, N.C.

BOTANICAL FIELD TRIP TO THE TUNICA HILLS.—In connection with the meeting of the Association of Southeastern Biologists at Louisiana State University, Baton Rouge, La., a botanical foray is being sponsored by the Southern Appalachian Botanical Club on Saturday, April 17, from 8:00 a.m. to 5:00 p.m. The trip will start at the Mississippi River and follow Highway 61 to St. Francisville, West Feliciana Parish and then on Highway 124 to an interesting area in the Tunica Hills. This route will thus traverse the recent Mississippi

River floodplain, and terraces belonging to the Peorian and Sangamon interglacial stages.

The Tunica Hills area has a rugged topography and is of botanical interest because of the relic species such as *Adiantum pedatum*, *Cystopteris fragilis* var. *protusa*, *Actaea alba*, *Asarum canadense*, *Acer saccharum*, *Pachysandra procumbens*, and *Panax quinquefolia*. It is believed these relic species came into Louisiana during the time of the last Wisconsin Glacial Period.

Fossils of white spruce, larch, and *Dulichium* were found mixed in with *Arundinaria*, oaks, magnolia, red gum, and sycamore. Animal remains of this deposit were the tusk of an elephant, molar of a tapir and lower jaw of the peccary.

Many of Audobon's studies were made in this general area.

Round trip about 125 miles. Cost of transportation for those without cars approximately \$1.50.

Please make reservation with the undersigned, indicating whether or not you will drive your own car, and how many you would be willing to accommodate. Drivers will be reimbursed at the rate of approximately \$1.50 per passenger. If necessary to charter bus, transportation rate will be slightly higher. Lunch will be extra.—CLAIR A. BROWN, LOUISIANA STATE UNIVERSITY, BATON ROUGE 3, LA.

AWARD OF THE 1954 WILLIAM HERBERT MEDAL TO THOMAS R. MANLEY.—The WILLIAM HERBERT MEDAL is the highest award made by The American Amaryllis Society, which is affiliated with The American Plant Life Society. The HERBERT MEDAL is awarded annually for eminent service toward the advancement of the amaryllids. The HERBERT MEDAL for 1954 has been awarded to Mr. Thomas R. Manley of Burlington, Vermont, for his outstanding contributions in the fields of evaluating vegetatively propagated clones of the large-flowering *Reginae* and *Leopoldii* hybrid Amaryllis, and methods for forcing Amaryllis for exhibition purposes. Mr Manley is a leader in these important fields, and his pioneer work has contributed materially toward the popularizing hybrid Amaryllis in the United States.

Mr. Manley is an outstanding contemporary horticulturist who has also made important contributions toward the advancement of other ornamental plant groups, particularly gladiolus. His autobiography will be published in the 1954 *Herbertia* Edition of Plant Life, which is dedicated to him.—HAMILTON P. TRAUB, 1531 RODEO ROAD, ARCADIA, CALIF.

ERRORS IN "FERNS OF MARYLAND."—Many writers have pointed out the curious phenomenon, that errors in data seem to get copied by subsequent compilers with especial faithfulness. In Dr. Reed's recent book, *Ferns of Maryland and Delaware*, there were misprints in connection with the citations of most of my articles, which I wish to formally correct.

p. 258. *Adiantum pedatum*, the variety should be *originarium*.
Asplenium bradleyi \times *montanum*, this was first published in *Amer. Fern J.* 25: 125. 1935.

p. 259. *Asplenium stotleri* was published in *Amer. Fern J.* 15: 52.

p. 261. *Dryopteris clintoniana* var. *australis*, date of publication was 1937.

p. 262. *Dryopteris slossonae* is mistakenly placed as a synonym of *D. clintoniana* forma *slossonae* (*D. cristata* \times *marginalis* also not being a synonym.) Five lines lower down the latter hybrid is given correctly as a separate taxon, and there should be inserted after that \times *D. slossonae* (Hahne) Wherry, *Bartonia* 21: 15. 1942. *Nephrodium slossonae* Hahne *Allg. Bot. Ztg.* 10: 103. 1904.

Dryopteris intermedia var. *fructuosa*.—this combination not validly made by me at place cited.

p. 264. *Equisetum sylvaticum* var. *mutiramosum* was the status assigned by me in the place cited (I particularly wished to point out that a plant with a distinct range can not be a forma as Fernald made it, but a variety.)

p. 265 *Lycopodium obscurum* var. *genuinum*. This combination was formally published on page 173 of the work cited.

Dr. Reed advises me that he plans to publish a list of these and the scores of other misprints in the book for insertion in copies sold in the future.—EDGAR T. WHERRY, UNIVERSITY OF PENNSYLVANIA.

Frank C. Cross, 9413 Second Avenue, Silver Spring, Maryland, a member of the Southern Appalachian Botanical Club since 1950, died March 11, 1953.

MID-APPALACHIAN FORAY.—A spring foray of the Southern Appalachian Botanical Club will be held at Moorefield, W.Va., on April 23 and 24, 1954. The foray will be in the form of a pilgrimage to the old home and collecting grounds of Dr. Hamilton McSparrin Gamble (1838-1917), physician and amateur botanist of Moorefield, who corresponded with Asa Gray. It will begin with a lecture on Dr. Gamble and his wild flowers, to be given at 8 p.m., April 23, at

Moorefield High School followed by a field trip next day to nearby shale barrens and other interesting collecting grounds.

Reservation for rooms may be directed to Hotel McNeill, Moorefield, W.Va. Rooms are also available in tourist homes. Requests for other information concerning the foray may be directed to L. Wayne Wilson, Moorefield High School, Moorefield, W.Va., or to Earl L. Core, West Virginia University.

BOOK REVIEW

FUNDAMENTALS OF ECOLOGY.*—Odum's recent text should be a welcome change for the animal ecologists as well as for biologists in universities and colleges where ecology is not divided into plant and animal coralls. The material has been reduced to a coverage suitable to a one semester course in either biological or zoological ecology. Botanists should find this book a valuable source of supplementary material for established courses in plant ecology.

The author is strongly opposed to memorization of definitions of ecological terms, and apparently avoids simple sentences which might be used as definitions. This may disturb the student who has been reared on a rich diet of terms. In lieu of definitions Odum resorts to what are titled "Statements", of a paragraph in length, followed by "Explanation" and "Examples." This somewhat unique approach may help to change words into concepts although the author shows the ecologist's ever present love of Greek and Latin *esotérica*.

The general outline of the subject matter follows the synecology pattern: Part I "Basic Ecological Principles and Concepts", Part II "The Habitat Approach," and Part III "Applied Ecology." Parts one and two are designed so that either may be given first, thus lending flexibility for the integration with field studies. The numerous diagrams, tables and photographs were well chosen and replace what might have been pages of lengthy text. Odum's *Fundamentals of Ecology* should receive wide acceptance in the biological fields. Any botanist interested in ecology should find this book of great value in welding the unnatural gap between the plant and animal "worlds", the "biosphere."—C. H. BAER, WEST VIRGINIA UNIVERSITY.

**Fundamentals of Ecology*. Eugene P. Odum. 384 p. 117 fig. \$6.50. W. B. Saunders Co., Philadelphia, Pa. 1953.





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